

## Gender, work-family conflict, and weight gain: four-year follow-up of the *Brazilian Longitudinal Study of Adult Health (ELSA-Brasil)*

Gênero, conflito entre trabalho e família e ganho de peso: o seguimento de quatro anos do *Estudo Longitudinal de Saúde do Adulto (ELSA-Brasil)*

Género, conflicto laboral-familiar y aumento de peso: 4 años de seguimiento en el *Estudio Longitudinal de Salud del Adulto brasileño (ELSA-Brasil)*

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### Abstract

*This study sought to analyze the effect of work-to-family conflict (demands from work that affect one's family/personal life), family-to-work conflict (demands from family/personal life that affect work), and lack of time for self-care and leisure due to professional and domestic demands on the incidence of weight gain and increase in waist circumference by gender in the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). Our study included 9,159 ELSA-Brasil participants (4,413 men and 4,746 women) who attended baseline (2008-2010) and the first follow-up visit (2012-2014). Weight gain and increase in waist circumference were defined as an annual increase  $\geq 75$ th percentile, i.e.,  $\geq 1.21$ kg/year and  $\geq 1.75$ cm/year, respectively for women; and  $\geq 0.96$ kg/year and  $\geq 1.41$ cm/year respectively for men. Associations were estimated by Poisson regression applying robust variance with the R software. Analyses were stratified by gender and adjusted for socioeconomic variables. Adjusted models showed a higher risk of weight gain among women who reported family-to-work conflict frequently and sometimes (relative risk – RR = 1.37 and RR = 1.15, respectively) and among those who reported frequent lack of time for self-care and leisure (RR = 1.13). Among men, time-based work-to-family conflict (RR = 1.17) and strain-based work-to-family conflict (RR = 1.24) were associated with weight gain. No associations were observed between work-family conflict domains and increase in waist circumference. These findings suggest that occupational and social health promotion programs are essential to help workers balance work and family life to reduce weight gain.*

*Work-Life Balance; Gender Analysis; Family*

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## Introduction

The work-family interface refers to the interaction between domains considered essential in adult life; difficulties in reconciling these domains subject workers to challenges that can affect their health and well-being<sup>1</sup>. Women workers often experience such challenges due to the unequal division of childcare and domestic chores. Although these activities are essential for the well-being of the family and for society as a whole, this often invisible and undervalued workload can be a burden for women<sup>2,3,4,5,6</sup>. In fact, time-use studies in 29 European countries showed that unpaid domestic work is “at the core of gender inequality”, even in countries with strong social support systems<sup>2</sup>. In Brazil, challenges of reconciling work and family domains are aggravated because of the country’s high gender inequality and incipient public social policies aimed to reduce conflicts between work and family, especially for women in lower-wage jobs<sup>3,4,5,6,7</sup>.

Difficulties in the work-family interface are also caused by drastic changes in several occupations, including increased workload and the feeling that free time is decreasing<sup>8,9</sup>. Advanced information and communication technologies mean that people can work anytime, anywhere, allowing them to work outside regular office hours more often. The expansion of work beyond traditional spaces and schedules hinders maintaining boundaries between professional and family life<sup>9</sup>.

This article addresses two aspects of the work-family interface related to health and well-being: work-family conflict and lack of time due to professional and domestic demands. Work-family conflict is defined as “a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect”<sup>10</sup> (p. 77). Its resulting conflicts can affect two directions: work-to-family conflicts caused by interferences of work demands in family life; family-to-work conflicts caused by interferences of family demands in work performance<sup>10,11</sup>. Several studies have reported associations between work-family conflict and physical<sup>12,13</sup> and psychological consequences<sup>1,14</sup>. Work-family conflict has also been associated with factors that contribute to weight gain, including unhealthy eating habits<sup>15,16</sup> and lower levels of physical activity<sup>16,17,18,19</sup>.

Time scarcity, also referred to as “lack of time”, is described as people’s perception of having insufficient time to complete necessary tasks<sup>20</sup>. It is associated with unhealthy behaviors, including consumption of ultra-processed foods<sup>21</sup>, unhealthy food choices<sup>8,22</sup>, lack of meal planning and diet quality<sup>23</sup>, and reduced physical activity<sup>22</sup>. Venn & Strazdins<sup>22</sup> analyzed the relationship between time (or the lack of it) and health, defining time as a finite resource for health since we need time to exercise, work, care, consume, and to build close relationships. The authors also suggested that time scarcity is socially patterned and, thus, a potential mechanism for generating health inequalities.

Difficulties in reconciling professional and domestic demands can trigger stress, and exposure to chronic psychological stressors might cause weight gain during adulthood<sup>24</sup>. Some studies have analyzed body mass index (BMI) and other variables related to weight gain regarding the life cycle (partnership, parenthood)<sup>13,25,26</sup>; however, we found no studies on work-family conflict or lack of time related to weight gain. Similarly, studies have associated time scarcity with unhealthy food choices<sup>8,21,27</sup>, but not directly with weight gain.

Most studies on the relationship between health and work-family conflict or time scarcity have been conducted in Western Europe and North America. Because work and non-work are no longer separate domains in several occupations, simultaneously affecting time dedicated to self-care and leisure, the *Brazilian Longitudinal Study of Adult Health* (ELSA-Brasil) was a pioneer in combining work-family conflict with lack of time for leisure and self-care. Previous cross-sectional results from ELSA-Brasil showed that time scarcity was associated with overweight and obesity among women who worked over 40 hours per week<sup>28</sup> and lower lifestyle ideal cardiovascular health scores among men and women. Both work-to-family and family-to-work conflicts were also associated with lower lifestyle ideal cardiovascular health scores among women<sup>16</sup>.

Understanding the various causes for weight gain among workers is essential to the national public health agenda. This study therefore aimed to analyze the effect of work-to-family conflict, family-to-work conflict, and lack of time for self-care and leisure due to professional and domestic demands on the incidence of weight gain and increase in waist circumference by gender in the ELSA-Brasil cohort.

## Methods

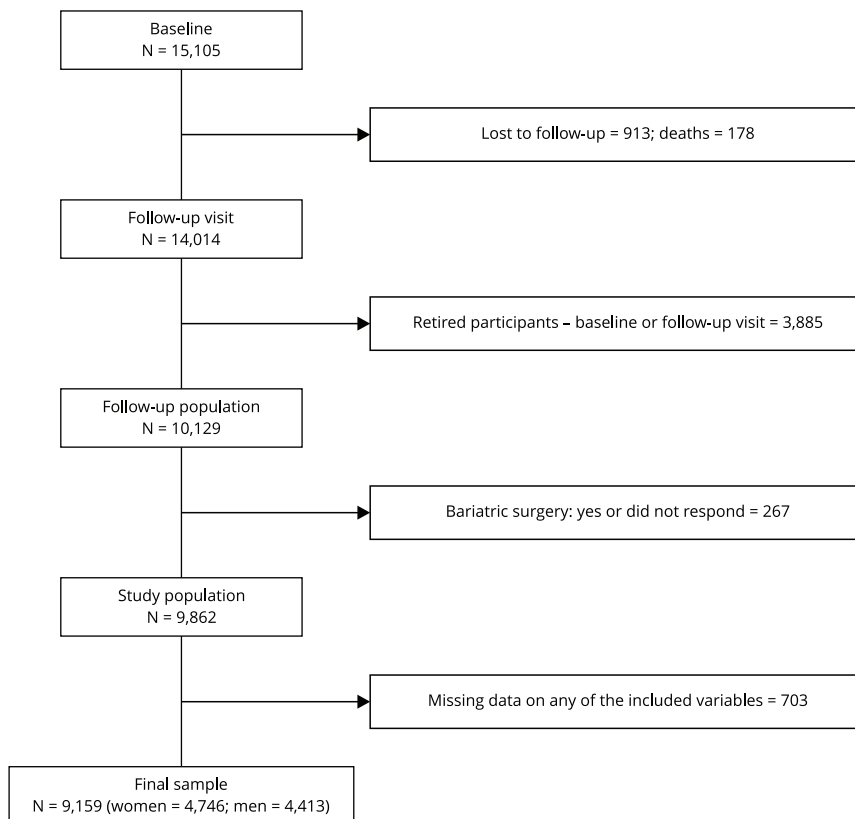
### Study design and population

The study sample consisted of participants of ELSA-Brasil, a multicenter prospective cohort study<sup>29</sup>. The ELSA-Brasil participants at baseline (2008-2010) included 15,105 active or retired civil servants (aged 35-74 years) from five universities and one research institute from six Brazilian state capitals [Salvador (Bahia State), Belo Horizonte (Minas Gerais State), Rio de Janeiro, São Paulo, Vitória (Espírito Santo State), and Porto Alegre (Rio Grande do Sul State)]<sup>29</sup>. These participants were invited to a follow-up visit (2012-2014) after a mean of 3.9 years (standard deviation – SD = 0.4 years), which 14,014 attended. After excluding retired participants (n = 3,885), participants who received bariatric surgery (n = 267), and those with missing data on any of the included variables (n = 703), our analytical sample included 9,159 participants (4,413 men and 4,746 women) who attended both baseline and the follow-up visit (Figure 1). The final sample had similar numbers to the eligible population: women (51.8% vs. 51.3%), < 55 years old (80.9% vs. 80.6%), with a university degree (55.1% vs. 54.6%).

The research protocol was approved by the Ethics Research Committee of each participating institution and by the Brazilian National Ethics Research Committee: Federal University of Minas Gerais (UFMG: 186/06); University of São Paulo (USP: 669/06); Federal University of Rio Grande

**Figure 1**

Flow-chart of participants, *Brazilian Longitudinal Study of Adult Health* (ELSA-Brasil), baseline (2008-2010) and follow-up visit (2012-2014).



do Sul (UFRGS: 194/06); Federal University of Espírito Santo (UFES: 041/06); Federal University of Bahia (UFBA: 027/06) and Oswaldo Cruz Foundation (Fiocruz: 343/06). All participants signed an Informed Consent Form.

### **Baseline and follow-up measurements**

In both baseline and follow-up measurements, standardized protocol were used to collect data during in-person visits by standardized, certified teams to the study sites <sup>30</sup>.

### **Outcome: annual gains in weight and waist circumference**

At both visits (baseline and follow-up), body weight was measured (in kg) using an electronic scale whereas waist circumference was measured (in cm) at the midpoint between the lowest rib margin and the iliac crest using an inelastic anthropometric tape. Measurements were taken after overnight fasting following a standardized protocol <sup>29,30</sup>. Annual gains in weight and increase in waist circumference were calculated as the difference in baseline and follow-up measurements divided by the time elapsed in years. Weight gain and increase in waist circumference were then defined as an annual gain  $\geq 75$ th percentile, i.e.,  $\geq 1.21$ kg/year and  $\geq 1.75$ cm/year respectively in women and  $\geq 0.96$ kg/year and  $\geq 1.41$ cm/year respectively in men.

### **Exposure: work-family conflict**

Work-family conflict at baseline was based on three items from a four-item questionnaire created by Frone et al. <sup>11</sup>: (i) time-based work-to-family conflict (demands from work keep you from spending enough time with your family), (ii) strain-based work-to-family conflict (work demands hinder fulfilling domestic responsibilities), and (iii) family-to-work conflict (family demands affect work responsibilities). An additional item was also included, considering the effect of both domains (work and family) on leisure time and self-care: lack of time for leisure and self-care (family and work demands keep you from spending enough time under your own care and on leisure activities) <sup>28,31</sup>. Response options for all four items (never to almost never, rarely, sometimes, frequently, and very frequently) were categorized as never to rarely (reference category), sometimes, and frequently. The psychometric properties of the Brazilian version of these four items have been shown previously <sup>31</sup>.

### **Covariates**

Covariates collected at baseline were: sex, age (continuous and categorized as  $< 45$  years or  $\geq 45$  years), schooling level (secondary education or lower, tertiary education), self-reported skin color/race (black, brown, white, of Asian-descendant, Indigenous), marital status (married/cohabiting, not married/not cohabiting), takes care of a sick person or a person with disability (yes, no), has children aged 5 years or younger (yes, no), hired a full-time domestic worker (yes, no), number of work hours per week ( $\leq 40$ ,  $> 40$ ), and per capita income (USD;  $< 466.8$ ,  $466.8-933.5$ ,  $\geq 933.6$ ).

### **Statistical analyses**

Descriptive analyses were performed to characterize the study population. Categorical variables are presented as absolute and relative frequencies whereas continuous variables are described by means and SD. Chi-square tests were performed. Crude and adjusted associations between work-family conflict and weight gain and increase in waist circumference were estimated by Poisson regression applying robust variance with R software version 3.5.1 (<http://www.r-project.org>). Analyses were adjusted for age, schooling level, and self-reported skin color/race and stratified by gender.

## Results

Mean age of the analytical sample at baseline was 47.9 (SD = 6.6) for women and 48.4 (SD = 6.9) years for men. Most participants had complete secondary or tertiary education, self-reported as white, and were married/cohabiting. Around 10% of participants had children aged 5 years or younger, and a quarter of all participants hired a full-time domestic worker. More men (39.5%) than women (29.4%) worked over 40 hours per week. About 33.2% women and 26.8% men reported frequent time-based work-to-family conflict; 25.8% women and 16.4% men reported frequent strain-based work-to-family conflict; 6.6% women and 7.3% men reported frequent family-to-work conflict; and 35.4% women and 24.9% men reported frequent lack of time for self-care (Table 1).

**Table 1**

Descriptive characteristics of the study sample at baseline and frequencies of weight and waist gain according to explanatory variables by gender. *Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), 2008-2010.*

Variables	Women (n = 4,746)			Men (n = 4,413)		
	Total	Weight gain	Increase in waist circumference	Total	Weight gain	Increase in waist circumference
Age (years) [mean (SD)]	47.9 (6.6)	46.2 (6.0)	46.8 (6.2)	48.4 (6.9)	46.7 (6.6)	47.7 (6.9)
< 45 [n (%)]	1,516 (31.9)	464 (30.1) *	417 (27.5) **	1,346 (30.5)	443 (67.1) *	385 (28.6) *
≥ 45 [n (%)]	3,230 (68.1)	723 (22.4)	770 (23.8)	3,067 (69.5)	660 (21.5)	719 (23.4)
Schooling level [n (%)]						
Secondary education or lower	1,978 (41.7)	535 (27.0) **	528 (26.7) ***	2,130 (48.3)	559 (26.2)	565 (26.5) ***
Tertiary education	2,768 (58.3)	652 (23.6)	659 (23.8)	2,283 (51.7)	544 (23.8)	539 (23.6)
Self-reported skin color/race [n (%)]						
Black	862 (18.2)	233 (27.0)	213 (24.7)	614 (13.9)	155 (25.2)	140 (22.8)
Brown	1,277 (26.9)	318 (24.9)	302 (23.6)	1,376 (31.2)	339 (24.6)	332 (24.1)
White	2,442 (51.5)	607 (24.9)	636 (26.0)	2,285 (51.8)	578 (25.3)	598 (26.2)
Asian-descendant	134 (2.8)	21 (15.7)	26 (19.4)	79 (1.8)	15 (19.0)	16 (20.3)
Indigenous	31 (0.6)	8 (25.8)	10 (32.3)	59 (1.3)	16 (27.1)	18 (30.5)
Marital status [n (%)]						
Married/Cohabiting	2,681 (56.5)	643 (24.0)	649 (24.2)	3,586 (81.3)	864 (24.1) **	867 (24.2) **
Not married/Not cohabiting	2,065 (43.5)	544 (26.3)	538 (26.0)	827 (18.7)	239 (28.9)	237 (28.7)
Cares for a sick person or person with a disability [n (%)]						
Yes	461 (9.7)	133 (28.9)*	122 (26.5)	352 (8.0)	85 (25.1)	90 (25.6)
No	4,285 (90.3)	1,054 (24.6)	1,065 (24.9)	4,061 (92.0)	1,018 (24.1)	1,014 (25.0)
Has children ≤ 5 years old [n (%)]						
Yes	495 (10.4)	139 (28.1)	123 (24.8)	631 (14.3)	156 (24.7)	159 (25.2)
No	4,251 (89.6)	1,048 (24.7)	1,064 (25.0)	3,782 (85.7)	947 (25.0)	945 (25.0)
Hired a full-time domestic worker [n (%)]						
Yes	1,267 (26.7)	288 (22.7) *	291 (23.0)	1,004 (22.8)	243 (24.2)	219 (21.8) **
No	3,479 (73.3)	899 (25.8)	896 (25.7)	3,409 (77.2)	860 (25.2)	885 (26.0)
Work (hours/week) [mean (SD)]	42.4 (10.1)	42.5 (10.1)	42.7 (9.9)	44.9 (11.2)	44.7 (11.0)	44.7 (11.6)
≤ 40 [n (%)]	3,350 (70.6)	842 (25.1)	824 (24.6)	2,669 (60.5)	650 (24.4)	661 (24.8)
> 40 [n (%)]	1,394 (29.4)	344 (24.7)	363 (26.0)	1,742 (39.5)	453 (26.0)	443 (25.4)
Time-based work-to-family conflict [n (%)]						
Never	1,805 (38.0)	444 (24.6)	433 (24.0)	1,791 (40.6)	425 (23.7)	441 (24.6)
Sometimes	1,366 (28.8)	371 (27.2)	367 (26.9)	1,440 (32.6)	356 (24.7)	362 (25.1)
Frequently	1,575 (33.2)	372 (23.6)	387 (24.6)	1,182 (26.8)	322 (27.2)	301 (25.5)

(continues)

**Table 1 (continued)**

Variables	Women (n = 4,746)			Men (n = 4,413)		
	Total	Weight gain	Increase in waist circumference	Total	Weight gain	Increase in waist circumference
Strain-based work-to-family conflict [n (%)]						
Never	2,085 (43.9)	509 (24.1)	507 (24.3)	2,355 (53.4)	586 (24.9) *	601 (25.5) ***
Sometimes	1,437 (30.3)	366 (25.5)	369 (25.7)	1,335 (30.2)	294 (22.0)	303 (22.7)
Frequently	1,224 (25.8)	312 (25.5)	311 (25.4)	723 (16.4)	223 (30.8)	200 (27.7)
Family-to-work conflict [n (%)]						
Never	3,184 (67.1)	748 (23.5) *	789 (24.8)	2,929 (66.4)	753 (25.7)	734 (25.1)
Sometimes	1,247 (26.3)	336 (26.9)	310 (24.9)	1,161 (26.3)	275 (23.7)	289 (25.1)
Frequently	315 (6.6)	103 (32.7)	88 (27.9)	323 (7.3)	75 (23.2)	81 (24.9)
Lack of time for self-care and leisure [n (%)]						
Never	1,493 (31.5)	337 (22.6)	368 (24.6)	1,871 (42.4)	437 (23.4)	461 (24.6)
Sometimes	1,572 (33.1)	410 (26.1)	396 (25.2)	1,441 (32.7)	376 (20.1)	363 (25.2)
Frequently	1,681 (35.4)	440 (26.2)	423 (25.2)	1,101 (24.9)	290 (26.3)	280 (25.4)

\* p-value &lt; 0.001;

\*\* p-value &lt; 0.01;

\*\*\* p-value &lt; 0.05.

Weight gain and increase in waist circumference were prevalent among the youngest participants, participants with a high school degree or lower schooling level, and unmarried/cohabiting men. Women with a full-time domestic worker showed lower weight gain and men with a full-time domestic worker showed lower increase in waist circumference. Finally, women who reported family-to-work conflict had higher weight gain and men who reported strain-based work-to-family conflict had higher weight gain and increase in waist circumference (Table 1).

Among women, adjusted models showed that family-to-work conflict reported as “sometimes” and “frequently” were associated with a higher risk of weight gain (relative risk – RR = 1.12; 95% confidence interval – 95%CI: 1.00-1.25 and RR = 1.37; 95%CI: 1.16-1.62, respectively). Lack of time for self-care and leisure reported as “sometimes” and “frequently” was also associated with weight gain, but with no gradient, dose-response relationship (RR = 1.15; 95%CI: 1.02-1.31 and RR = 1.13; 95%CI: 1.10-1.28, respectively) (Table 2). Among men, frequent time-based and strain-based work-to-family conflict was associated with a higher incidence of weight gain (RR = 1.17; 95%CI: 1.03-1.32 and RR = 1.24; 95%CI: 1.09-1.41, respectively). No associations between work-family conflict and increase in waist circumference were observed among participants, except among women who reported “sometimes” time-based work-to-family conflict (RR = 1.13; 95%CI: 1.01-1.28) (Table 3).

## Discussion

This large multicenter study brought new insights about work-family conflict and lack of time for self-care and leisure and their association with weight gain, showing different trends for men and women. Among men, only work-to-family conflict affected weight gain. Among women, family-to-work conflict affected weight gain and lack of time for self-care and leisure.

The direction of the conflict (work-to-family or family-to-work) and its effects are seemingly influenced by the cultural roles attributed to men and women. Thus, although our sample includes professional men and women workers, the different conflict directions reflect traditional gender roles, in which women are responsible for the home and family while men are responsible for providing financial support<sup>4</sup>. The culture of ideal work, which usually divides work and family problems, can be particularly challenging for women, who still perceive themselves as the main responsible for the family's well-being. Some women could thus feel a widening gap between their work and family or

**Table 2**

Crude and adjusted relative risk (RR) and 95% confidence interval (95%CI) for the association between work-family conflict items and weight gain by gender. *Brazilian Longitudinal Study of Adult Health (ELSA-Brasil)*.

Work-family conflict items	Women (n = 4,746)		Men (n = 4,413)	
	RR crude (95%CI)	RR adjusted * (95%CI)	RR crude (95%CI)	RR adjusted * (95%CI)
Time-based work-to-family conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.10 (0.98-1.24)	1.12 (1.00-1.23)	1.04 (0.92-1.18)	1.05 (0.93-1.19)
Frequently	0.96 (0.85-1.08)	0.99 (0.88-1.12)	1.15 (1.01-1.30)	1.17 (1.03-1.32)
Strain-based work-to-family conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.04 (0.93-1.18)	1.04 (0.93-1.17)	0.89 (0.78-1.00)	0.89 (0.79-1.00)
Frequently	1.04 (0.92-1.17)	1.05 (0.93-1.19)	1.24 (1.09-1.41)	1.24 (1.08-1.41)
Family-to-work conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.15 (1.03-1.28)	1.13 (1.01-1.26)	0.92 (0.82-1.04)	0.91 (0.81-1.03)
Frequently	1.39 (1.17-1.28)	1.36 (1.15-1.61)	0.90 (0.73-1.11)	0.91 (0.74-1.12)
Lack of time for self-care and leisure				
Never	1.00	1.00	1.00	1.00
Sometimes	1.15 (1.02-1.31)	1.16 (1.02-1.32)	1.11 (0.99-1.26)	1.10 (0.97-1.23)
Frequently	1.16 (1.03-1.31)	1.15 (1.02-1.31)	1.13 (0.99-1.28)	1.12 (0.99-1.28)

\* Model adjusted for age, schooling level, and self-reported skin color/race.

**Table 3**

Crude and adjusted relative risk (RR) and 95% confidence interval (95%CI) for the association between work-family conflict items and waist gain by gender. *Brazilian Longitudinal Study of Adult Health (ELSA-Brasil)*.

Work-family conflict items	Women (n = 4,746)		Men (n = 4,413)	
	RR crude (95%CI)	RR adjusted * (95%CI)	RR crude (95%CI)	RR adjusted * (95%CI)
Time-based work-to-family conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.12 (0.99-1.26)	1.13 (1.01-1.28)	1.02 (0.91-1.15)	1.03 (0.91-1.16)
Frequently	1.02 (0.91-1.15)	1.05 (0.93-1.19)	1.03 (0.91-1.17)	1.05 (0.93-1.19)
Strain-based work-to-family conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.06 (0.94-1.19)	1.06 (0.94-1.19)	0.89 (0.78-1.00)	0.90 (0.80-1.01)
Frequently	1.05 (0.94-1.18)	1.05 (0.93-1.19)	1.08 (0.95-1.24)	1.09 (0.95-1.25)
Family-to-work conflict				
Never	1.00	1.00	1.00	1.00
Sometimes	1.00 (0.90-1.12)	0.99 (0.88-1.11)	0.92 (0.82-1.04)	1.00 (0.89-1.12)
Frequently	1.13 (0.94-1.36)	1.11 (0.92-1.34)	0.90 (0.73-1.11)	1.00 (0.82-1.22)
Lack of time for self-care and leisure				
Never	1.00	1.00	1.00	1.00
Sometimes	1.02 (0.90-1.16)	1.03 (0.91-1.16)	0.99 (0.88-1.12)	1.02 (0.91-1.15)
Frequently	1.02 (0.90-1.15)	1.02 (0.90-1.15)	1.00 (0.82-1.22)	1.05 (0.92-1.19)

\* Model adjusted for age, schooling level, and self-reported skin color/race.

feel guilty about neglecting work<sup>32</sup>. Offer<sup>33</sup> found that while men thought about labor-related matters more often than women, their concerns did not result in unpaid labor, whereas women's labor-related thoughts tended to involve unpaid labor and leisure activities. According to the author<sup>33</sup>, both women and men think about family-related concerns at work, but these thoughts are more harmful to women's health. Moreover, distress from family-to-work conflicts was seemingly prevalent among women, whereas long working hours, conflict at work, and low career perspectives<sup>1</sup> especially affected men. Some authors<sup>15</sup> have supposed that family-to-work issues could be more stressful than work-to-family ones, leading to unhealthier food choices, especially in circumstances of greater emotional engagement (for example, while taking care of family members). Previous cross-sectional results from ELSA-Brasil found that family interference was associated with work, physical activity, and lifestyle ideal cardiovascular health score (including diet, physical activity, smoking, and BMI) only among women<sup>16</sup>, which could explain part of the observed effects of family-to-work conflict on weight gain.

We observed gender differences in the effect of lack of time for self-care and leisure on weight gain, similarly to a previous cross-sectional ELSA-Brasil investigation, in which both overweight and obesity were associated with such lack of time but only among women who worked over 40 hours per week<sup>31</sup>. Together, these results indicate gender differences in the relationship between time scarcity and weight-related variables, which require more public attention. Gender differences in lack of time for self-care and leisure can be analyzed from the number of hours spent on professional and domestic tasks (total working hours). Although our study sample had no information on total working hours, recent Brazilian statistics suggest that women have higher total working hours<sup>34</sup>, thus leaving less time for self-care and leisure. On the other hand, a simple analysis of work duration does not consider the complexity involved in organizing this work each day. Chatzitheochari & Arber<sup>35</sup> proposed an innovative complementary approach to time-use studies, showing subtle aspects of time perception that could help interpret our results. The authors analyzed the quality of free time (daily time not occupied by professional work and self-care) based on its fragmentation, that is, the number of interruptions<sup>35</sup>. They observed that women had greater fragmentation of time since their free time often coincided with domestic chores (i.e., two activities at the same time), which happened much less among men. For the authors<sup>35</sup>, dealing with various constraints during free time is another obstacle to women's leisure. These results, which affect the "free" character of time, corroborate Pereira et al.<sup>36</sup> regarding too much time for the others linked to too little time for oneself.

Regarding care activities, compared to men, many women participants of ELSA-Brasil were single, widowed, or divorced; they more often cared for a sick person or a person with a disability; and many also reported having children aged 5 years and younger. Therefore, many single women participants in our study could be raising children and caring for older adults. Women who were responsible for working and being the primary caregiver reported intensified time pressure and were more likely to complain about insufficient time for themselves than other women. This context and the aging of the population affirm the importance of thinking about a new division of care work in which both women and men are responsible for care for dependent people<sup>37</sup>. Women are also traditionally more responsible for family commitments such as food preparation and household chores, which can affect their available time for leisure and physical activity<sup>3</sup>. Perceptions of time scarcity caused by these commitments could also increase consumption of convenience foods, ready meals, and fast food<sup>8</sup>. These results emphasize the unequal experience of men and women regarding lack of time and its possible association with rising levels of obesity<sup>38</sup>.

According to the literature, causes for the effect of time scarcity on weight gain in women may involve both the type of diet and physical activity. In dual-earner families, household tasks are shortly completed in the early evening, favoring the replacement of traditional family meals with more convenient options<sup>27</sup>. Some studies have attributed the feeling of time scarcity to the increased prevalence of employed parents. Moreover, employed mothers often complain of a general lack of time, which can influence their food choices<sup>8,21</sup>. In fact, several conceptual models recognize the availability of time as essential regarding food choice, especially time for food preparation and home cooking<sup>38,39,40</sup>, whereas time scarcity favors physical inactivity<sup>22</sup>.

The question used to analyze lack of time in this study mentions "lack of time for self-care and leisure due to professional and domestic demands". Thus, since self-care and leisure are knowingly



related to health, an association between lack of time and health outcomes is expected. Moreover, this question limits the possibility of direct comparisons with other Brazilian and international studies which are based on questions directly linked to the perception of time per se, such as: “*How often do you feel rushed and pressed for time?*”<sup>22</sup> (p. 3). These do not specify lack of time for what or because of what. Though the unavailable comparability can be a limitation, it is also a strength since our specific question allows for analyzing perceived lack of time due to both professional and domestic demands while considering time for self-care and leisure. Our study also has other important strengths. This is the first large, contemporary cohort study with small losses to follow-up to investigate how work-to-family conflict, family-to-work conflict, and the influence of both types of conflict on lack of time for self-care and leisure affect the incidence of weight gain in a large Brazilian sample by gender. Studies on the possible influence of these factors on weight gain are still incipient, especially in less-developed countries. Furthermore, we performed highly standardized measurements, including waist circumference, with strict quality control.

However, this study has limitations. Firstly, the work-family conflict indicators used might only partly represent the whole work-life conflict model since isolated items were used to measure complex dimensions of a higher construct. Secondly, since civil servants are a specific population, our results might only reflect the middle-class, employed individuals, or civil servants who live in the largest cities of Brazil. Moreover, since our sample population is aged over 35 years, our data might not represent possible gender differences in the younger generations. Finally, our outcome was assessed over a relatively short time (four years), which could explain the predominant lack of association between measures of work-family conflict and changes in waist circumference.

Overall, the asymmetric relationships between men and women in professional and domestic domains result in differences in the direction of the work-family conflict, in the lack of time for self-care and leisure, and their effects on weight gain. Such asymmetry reflects the socially-produced gender system, which creates expectations of what it means to be a man and to be a woman, causing pervasive health inequalities between the genders<sup>5</sup>. Women, for example, see themselves as responsible for managing their home and family<sup>34</sup>. Thus, gender is not caused by a dichotomy based on sex, but by a complex system that structures the lives of human beings through the process of socialization<sup>5</sup>, a process that should be (re)built in daily negotiations<sup>40</sup>.

To conclude, balancing work and family domains has become a challenge for many contemporary workers. This study results suggest that occupational and social health promotion programs are essential to help workers balance work and family life to reduce weight gain. In countries with high social and gender inequalities, future research should consider the influence of social determinants on health and the effect of work-family conflict on lifestyle (e.g., diet, physical activity, and stress) and weight gain among women and men to better understand their association. Ultimately, closing gender gaps in labor market will benefit both women and men and their households and also the global economy.

## Contributors

R. H. Griep contributed on the study coordination, statistical data analysis and article writing. A. Silva-Costa collaborated in the statistical analysis, description of results and final review of the text. D. Chor, L. O. Cardoso, S. Toivanen and M. J. M. Fonseca contributed to the theoretical content and final review of the text. L. Rotenberg participated on the conception of the article, contributed to the theoretical content and final review of the article.

## Additional informations

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## Resumo

O objetivo foi analisar o efeito de conflitos entre o trabalho e a família (demandas do trabalho que interferem na vida familiar ou pessoal) e entre a família e o trabalho (demandas da vida que interferem no trabalho), além da falta de tempo para autocuidado e lazer em função de demandas profissionais e domésticas, na incidência de ganho de peso e aumento da circunferência abdominal, de acordo com gênero, no Estudo Longitudinal de Saúde do Adulto (ELSA-Brasil). O estudo presente incluiu 9.159 participantes do ELSA-Brasil (4.413 homens e 4.746 mulheres) que frequentaram a linha de base (2008-2010) e a primeira visita de seguimento (2012-2014). O ganho ponderal e o aumento de circunferência abdominal foram definidos enquanto ganho anual  $\geq 75^{\text{o}}$  percentil, i.e.,  $\geq 1,21\text{kg/ano}$  e  $\geq 1,75\text{cm/ano}$ , respectivamente, em mulheres, e  $\geq 0,96\text{kg/ano}$  e  $\geq 1,41\text{cm/ano}$ , respectivamente, em homens. As associações foram estimadas pela regressão de Poisson com variância robusta, usando o software R. As análises foram estratificadas por gênero e ajustadas por variáveis socioeconômicas. Os modelos ajustados mostraram risco maior de ganho ponderal em mulheres que relatavam conflitos frequentes ou eventuais de família para o trabalho (risco relativo – RR = 1,37 e RR = 1,15, respectivamente), e naquelas que relatavam frequentemente falta de tempo para autocuidado e lazer (RR = 1,13). Nos homens, os conflitos de tempo do trabalho para a família (RR = 1,17) e os conflitos de tensão do trabalho para a família (RR = 1,24) mostraram associação com ganho ponderal. Não foram observadas associações nos domínios dos conflitos de trabalho para a família e o aumento de circunferência abdominal. Os achados sugerem a necessidade de programas de promoção ocupacional e de saúde social para ajudar homens e mulheres economicamente ativos a equilibrarem o trabalho e a vida familiar para reduzir o ganho de peso.

Equilíbrio Trabalho-Vida; Análise de Gênero;  
Família

## Resumen

El objetivo fue analizar el efecto del trabajo en conflictos de familia (exigencias del trabajo que interfieren en la familia/vida personal), conflictos de familia en el trabajo (exigencias de la familia/vida personal que interfieren con el trabajo), y la falta de tiempo para el autocuidado y ocio, debido a exigencias profesionales y domésticas en la incidencia de aumento de peso y aumento de contorno de cintura por género en el Estudio Longitudinal de Salud del Adulto brasileño (ELSA-Brasil). Este estudio incluyó a 9.159 participantes del ELSA-Brasil (4.413 hombres y 4.746 mujeres) que formaban parte de la base de referencia (2008-2010) y de la primera visita de seguimiento (2012-2014). El aumento de peso y contorno de cintura se definió como un aumento anual  $\geq 75^{\text{o}}$  percentil, p.ej.,  $\geq 1,21\text{kg/año}$  y  $\geq 1,75\text{cm/año}$ , respectivamente, en mujeres, y  $\geq 0,96\text{kg/año}$  y  $\geq 1,41\text{cm/año}$ , respectivamente, en hombres. Se estimaron las asociaciones por regresión de Poisson, aplicando variancia robusta, usando R software. Se estratificaron análisis por género y se ajustaron para variables socioeconómicas. Los modelos ajustados mostraron un riesgo mayor de aumento de peso entre mujeres que informaron de un conflicto de familia para trabajar frecuentemente y a veces (riesgo relativo – RR = 1,37 y RR = 1,15, respectivamente), y entre quienes informaron de falta de tiempo para el autocuidado y ocio frecuentemente (RR = 1,13). Entre hombres, el trabajo basado en el tiempo respecto a conflictos familiares (RR = 1,17), así como el trabajo basado en el esfuerzo respecto a la misma cuestión (RR = 1,24) estuvieron asociados al aumento de peso. No se observaron asociaciones entre los ámbitos trabajo-conflictos de familia y aumento de peso. Estos resultados sugieren la necesidad de programas sociales de promoción ocupacional y de salud para ayudar a hombres y mujeres a equilibrar la fuerza laboral en el trabajo y la vida familiar, con el fin de reducir el aumento de peso.

Equilíbrio entre Vida Personal y Laboral; Análisis de Gênero; Familia

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